

Wheels of Change: Transforming Girl's Lives with Bicycles

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Motivation and Background

Despite considerable progress in closing the gender gap in education, there still exists several **barriers to human capital accumulation for girls in developing countries**. Some of the important barriers include:

- cost of schooling,
- distance to school,
- safety,
- lack of agency,
- deep-rooted cultural norms.

Addressing these gender-specific barriers to human capital accumulation is an important policy goal for developing countries due to its far-reaching implication on well-being of women and country's growth and development.



In **rural Zambia**, three times as many girls in Grade 11 left school compared with their male peers.

In our sample, 98% of the students walk to school, taking 110 minutes each way, and 35% of the girls had been harassed on their commute.

Intervention

We evaluated the Bicycle for Empowerment and Education Program (BEEP) implemented by World Bicycle Relief (WBR). WBR provided **bicycles to adolescent girls** in grades 5, 6, and 7 **who live more than 2.5 km away from school**. The bicycle was given on the **condition that it will be used primarily for attending school**.

The bike directly **alleviates costs of education** (distance and safety), can lead girls to have **higher measures of empowerment**, and improve her chances of long-term well-being by **increasing educational attainment**.

Design

We run a **Randomized Control Trial (RCT)** in 100 schools in the Southern Province of Zambia.

We randomly divided the schools into two treatment groups and a control group:

- `Payment Arm' (treatment 1) – 25 schools - BEEP + upfront payment by parents/guardians
- `No Payment Arm' (treatment 2) – 20 schools - BEEP
- Control - 55 schools

We collected baseline data in 2017 before the distribution of the bicycles, endline data in 2018, and follow-up administrative data in 2019, 2020 and 2021.



Research Ethics and Transparency

- IRB approval from Innovations for Poverty Action, Yale University, UNZAREC Zambia
- The study was pre-registered with the AEA Trial Registry ([RCT ID: AEARCTR-0003339](https://www.aeatr.org/record/0003339))

Results

First Stage Outcomes

- Bicycles reduced the girls' **commute time by one-third**, saving them more than an hour each day
- Girls were **one-third less likely to miss school due to concern for their safety** and **22% less likely to be harassed**

Empowerment

- Girls with bicycles were 0.12 standard deviations (sd) **more empowered** than girls in the control group.
- Girls with bicycles reported **feeling more in control of the decisions** affecting their lives than the girls in the comparison group (0.18 sd).
- Girls with bicycles **ranked themselves higher academically** and had a greater belief in their potential to succeed in life (0.13 sd).
- Pro-sociality amongst the girls increased with the bicycle. This included their willingness to help a friend, their participation in local clubs and their knowledge of local leadership (0.15 sd).
- Girls with bicycles **had access to and control over resources and had more open communication with their parents** (0.21 sd).

Education

- The bicycles **increased punctuality by 66%**. The bicycles reduced the days that girls arrived late by one and a half days per week.
- The bicycles **reduced absenteeism by 28%**. The girls with bicycles attended school approximately five more days per year than girls without bicycles.
- Girls with bicycles **scored higher on a mathematics assessment test**.
- In the medium-run (after 2 and 3 years of intervention), the bicycles also helped girls stay enrolled in school.



Conclusion

This research finds that a conditional kind transfer of a **bicycle** can be a **useful policy tool to transform the lives of girls**: girls in the treatment schools reported feeling more empowered, they reported less commute time to school, absenteeism, late arrival to school, and improved test scores and safety, time use, grade transition, and dropout.

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